Title

Tweet style: campaigning, governing, and social media in Australia

Journal

Australian Journal of Political Science, 54(2)

ISSN

1036-1146

Author

Kousser, Thad

Publication Date

2019-04-03

DOI

10.1080/10361146.2019.1568966

Peer reviewed

Tweet Style:

Campaigning, Governing, and Social Media in Australia

Abstract. When politicians use the new tools of social media to talk directly to voters, how strategic are these communications? Do lawmakers change how they present themselves in different situations, tweeting differently during campaigns and when their party is out of power, or tailoring their 'tweet style' to the preferences of constituents? I explore these questions by categorizing 291,091 tweets by sitting legislators in Australia, a nation that features variation in electoral systems in its two legislative houses and which held an election after widespread adoption of social media. When their party controls government, politicians tweet about their personal characteristics and about daily events more often, avoiding clear ideological positions. When an election is called, politicians both in government and in the opposition tweet toward their own sides of the ideological spectrum.

Key Words: Twitter, Australia, campaigns and elections, social media, machine learning,
content analysis

Word Count: 7969

For America's president and for thousands of politicians across the globe, tweeting has become an increasingly prominent form of political communication. For scholars examining the rhetoric of elected officials, candidates, and even of protesters, Twitter has become an increasingly promising and vital arena to study (Bruns and Moon 2018, Grant et al. 2010, Bruns and Highfield 2013, Bruns and Moon 2018, Graham et al. 2013, Evans, Cordova, and Sipole 2014, Evans and Clark 2016, Graham et al. 2016, 2017, McGregor et al. 2016). It provides a vast repository of statements by a wide range of politicians, holding constant their medium of communication whether they are in a campaign cycle or in government. Fine-grained measures of the timing of tweets allow scholars to study how messages change over time and under different political dynamics. And Twitter has often become the outlet for the raw and unfiltered views of leaders, as President Trump's feed has so often demonstrated.

Yet analysing political communication through Twitter also poses challenges. Can scholars extract meaningful messages from short bursts of text, and do so in a way that can be replicated across the hundreds, thousands or hundreds of thousands of tweets that a politician sends? Prior studies have used both traditional human coding methods (Graham et al. 2013, Evans and Clark 2016, Graham et al. 2016, 2017) and a range of computing tools (Barbera 2015, Barbera et al. 2015, Bruns and Highfield

2013, Grant et al. 2010, King, Orlando, and Sparks 2015) to categorize tweets.

Both Vergeer (2015) and Jungherr (2016) presented detailed surveys of this literature.

In this paper, I adopt a strategy that combines the strengths of different quantitative approaches, using the hybrid of big data and small data methods termed ‘supervised learning’. I worked with a team of research assistants to categorize the political features of a sample of 2500 tweets and then used these categorizations to train computer algorithms, testing the algorithms to ensure that they could replicate the human decisions. The final measurement step was to use the algorithms to code the entire set of 291,091 tweets sent by every sitting legislator with a Twitter account Australia’s parliament.

This approach unlocks a new avenue to explore how politicians communicate through Twitter, on a large scale. To connect today’s tweets to broader theories about longstanding political dilemmas, I loosely ground my exploration in Fenno’s (1977) classic investigation of legislators’ ‘homestyles’, adapting his constructs to Australian ‘tweet styles’ through interviews with eleven current Australian officeholders. While the analogies are necessarily imperfect, since they are transported from one nation to another and from personal interactions to social media communication, Fenno’s work directs attention to key strategic choices that politicians make when they interact with the public. I focus on three relevant aspects of

tweet style – allocation of resources, presentation of self, and explanation of capitol activity – and set forth hypotheses about how these should shift in response to political circumstances.

This project focuses on a country, Australia, in which the adoption of Twitter by politicians has become widespread over the past half-decade and has been studied by Grant et al. (2010), Bruns and Highfield (2013), and Bruns and Moon (2018). Because the nation held a long campaign that led to a shift in the control of parliament, it is possible to isolate the impacts both of campaigning and of governing upon the communication of the same set of politicians over time. Since party discipline in Australia's parliament is so strong – making roll call analyses uninformative about the ideological positions of legislators – locating their positions on the left-to-right spectrum through their tweets provides both a new ideological map of Australian politics as well as an example of how this could be done in other legislatures with rigid party discipline. Australia, then, is fertile ground to explore whether a combination of human and artificial intelligence can teach new lessons about political communication.

After introducing hypotheses about Twitter communication by legislators and introducing my Australian dataset, I test these conjectures using the full set of all tweets ever sent by sitting Australian politicians in 2015. Subtle but significant changes in how politicians represent their positions demonstrate how campaigning and governing alters their communication strategies. I show that when their party controls

government, politicians tweet more about personal events or characteristics, avoiding clear ideological positions. This fits with an emerging line of research into the personalization of Twitter and online political communication (Lee and Oh 2012, Enli and Skogerbø 2013, Kruikemeier et al. 2013, McGregor et al. 2016, Graham et al. 2017). When an election is called, politicians change their behavior by tweeting more consistently toward their own side of the ideological spectrum. These findings speak to the literatures on candidates' policy divergence during elections (Sullivan and Minns 1976, Ansolabehere, Snyder, and Stewart 2001, and Burden 2004). I conclude by considering the broader implications of this Australian analysis for literatures on social media and politics.

Hypotheses about Political Communication Through Twitter

Australia provides a fertile ground to explore social media communication strategies because Twitter has long been broadly adopted by members of its Parliament. On the Parliament of Australia's official website, the roster of members lists not their office phone numbers or addresses but links to their Facebook pages and Twitter feeds (Parliament of Australia 2016). Social media is clearly important to these politicians. According to the interviews that I conducted with eleven sitting federal and state lawmakers in early 2015, it is so important to those lawmakers that they each ran their handles themselves, usually from a mobile phone, rather than allowing a communications staff to tweet on their behalf as many members

of the US Congress do.[1] Even those on the front bench, including Leader of the House Christopher Pyne and Leader of the Opposition in the Senate Penny Wong, reported to me that they sent their own tweets.

This allows for the study of unfiltered elite communication that reflects – whether through a conscious set of choices or through the intuition of successful politicians – strategic political communication. Who is listening to this communication? Australia's Twitter audience is growing but not yet universal, it is imperfectly representative of the electorate, and it is politically persuadable. Bruns and Moon (2018, 427) report that there are 3.5 million Australian Twitter accounts and that 19% of Australian internet users are on Twitter. Many journalists tweet and cover the tweets of politicians, with journalistic coverage of tweets likely magnifying their reach beyond the immediate Twitter audience. A poll conducted before Australia's 2016 elections by Galaxy Media showed that Twitter users are slightly more likely to be Labor or Greens voters than the general electorate, that 71% of users formulate their political views based on what they view on Twitter, and that 22% reported shifting their support from one party to another in response to something they saw on Twitter.[2] All of this suggests, then, that

[1] It is important to note that whether politicians tweet by themselves or whether political staff sometimes do so on their behalf – which is often the case in the United States – this is communication performed by a team to shape the public's view of an individual. Just like floor speeches and press releases are often crafted by lawmakers working with staff, tweets that emanate from a political office can reveal much about how politicians want to be viewed.

[2] See Galaxy Research, "The Australian Voter on Twitter," at https://g.twimg.com/blog/blog/image/TWI-Election-Infographic.png

while Twitter is not yet a mass media with universal reach, politicians can use this social media platform to communicate – either directly or through journalistic coverage – with a sizeable segment of the electorate who look for political news on Twitter and who may change their political views based on what they read.

What sorts of strategies, then, might Australian lawmakers pursue on Twitter? A useful framework for thinking about how they use social media to present themselves can be adapted from Fenno's (1977) classic work on the home styles adopted by members of Congress in their districts. Each of the three components of a US Rep's home style – allocation of resources, presentation of self, and explanation of capitol activity – has an analog in an Australian politician's tweet style. In the following three sections, I explore these components of home style, each of which will become a dependent variable in my empirical analysis.

Allocation of Resources

When it comes to the allocation of resources, it might at first appear that the use of social media is relatively costless, compared to the price of flying back to a district or establishing a fully staffed office. Yet according to Fenno (1977, 890), 'Of all the resources available to the House member, the scarcest and most precious one, which dwarfs all others in posing critical allocative dilemmas, is his time'. Tweeting, especially when it is done by a legislator herself, taxes the time and mental energy even of politicians who spend so much of their lives communicating. When I interviewed Anne

McEwen, Chief Opposition Whip in the Senate, I noted that she very rarely tweeted. 'That's right,' she replied. 'Partly this is because I'm not good at it, partly because it would take too much time'.[3]

What factors should systematically predict whether legislators allocate enough of their time to build such followings? Fenno theorizes that politicians facing electoral jeopardy will allocate more of their personal time and staff resources to their districts, in order to buttress themselves against any nascent or emerging political challenge. The same logic should push Australian politicians to advertise themselves and their positions more frequently through Twitter. Tweeting is one (of many) ways for them to build political support, and they will tweet most actively when they face the greatest threat.

Two measures can identify the legislators who should face the most electoral jeopardy. First, the 150 House members who run in single-member districts every three years (or sooner, if an early election is called) will be more focused on reelection than the 76 senators, who run every six years in proportional representation contests held in each state or territory. Facing more frequent reelections brings more electoral jeopardy, which should motivate legislators to allocate more of their time to building connections to voters through tweeting. Second, district-level political competition should influence tweet style. Some legislators expect to face closer elections than

[3] Interview with federal Senator and Chief Opposition Whip in the Senate Ann McEwen, Labor Party, conducted by the author in Adelaide, South Australia, June 9, 2015.

others, increasing their electoral jeopardy and motivating them to tweet more often. House members who won with tighter margins of victory in the 2013 election will feel greater threat than those who won with larger majorities. Thus two empirical hypotheses test the idea that electoral pressures lead legislators to allocate more of their time to social media communication.

> *Hypothesis 1. Compared to senators (elected every six years through PR), House members (elected every three years or fewer in SMDs) will tweet at a higher rate.*
>
> *Hypothesis 2. When the margin of victory by House members is narrower, the frequency of tweets since the last election will be higher*.

Presentation of Self

Political leaders also choose a strategic presentation of self. To Fenno, this is the centerpiece of home style, with politicians pursuing either a person-to-person or an issue-oriented approach. Australian politicians both give and give off an expression of themselves through Twitter when they choose either to reveal a collection of details about their personal tastes and daily pursuits or to use it primarily as a pulpit to espouse their political views. Each approach serves an important goal.

If they adopt a person-to-person style, 'members of Congress go home to present themselves 'as a person' – and to win the accolade 'He's a good man,' 'She's a good woman.' …The congressman conveys a sense of *identification* with his constituents. Contextually and verbally, he gives them the impression that 'I am one of you.' (Fenno 1977, 898, 899, emphasis in

original). Some Australian politicians use Twitter the same way, seeking to connect personally with their constituents. Federal MP Andrew Southcott sees the value in this approach, though his political advisors may not. 'Sometimes the party people will say that I shouldn't tweet about being at a football game,' reports Southcott, 'but I was there and so were 50,000 voters'.[4] By contrast, legislators with a more issue-oriented style seek to find common ground in policy positions, or simply by addressing pressing issues of the day. Their tweets will focus on policy rather than personality.

Scholars from multiple disciplines looking at nations that range from the UK to the US to the Netherlands to South Korea to Norway have, often independently, identified and explored the use of personalization in the tweets of politicians. When politicians highlight 'their personal lives over their policy positions' (McGregor et al. 2016, 264), this can convey 'authenticity' (Graham et al. 2017, 140) and 'allow politicians to stage their own multidimensional personae on a continuous basis' (Enli and Skogerbø 2013, 770). Experimental evidence from Lee and Oh (2012) and Kruikemeier et al. (2013) shows that personalizing online communication can lead to better message recall and can increase citizens' sense that they have contact with politicians.

How do politicians choose their presentation of self? In Fenno's analysis, the issue-oriented approach brings more political risks than the person-to-person style, because issue positions are 'potentially

[4] Interview with federal MP Andrew Southcott, Liberal Party, conducted by the author in Adelaide, South Australia, March 31, 2015.

divisive'(1977, 902). In Australia, one group of politicians who may wish to shy away from discussing divisive issues on Twitter are those in the governing party. Members of the government may avoid the unnecessary risk of taking clear stands on controversial issues online for the same reason that campaign front-runners often avoid debates. They could seek to elevate themselves above the fray, leaving it to their challengers to press a policy argument. These incentives work in a way that is similar to what Bruns and Highfield (2013, p. 676) found in their analysis of tweets in the 2012 elections in the Australian state of Queensland, in which the campaign frontrunner could tweet more passively, while the other party 'needed to try a considerably more aggressive approach to changing voters' views'. If this is the case, we should observe a higher ratio of safely personal tweets – ones that demonstrate no clear ideological leanings – when a party is in power.

Running in a campaign may also affect the calculus of politicians, pushing them to present themselves in the most broadly appealing light possible. After an election is called, the stakes of every word that a politician says or tweets are heightened. Legislators consciously internalize this heighted sense of risk and change their communication strategies in response to it, according to the testimony of Andrew Leigh, a federal Labor Party MP. On Twitter, he says, 'My goal is to be interesting. During elections, though, I'm very careful in what I say or what articles I point to, because the cost of a gaffe is high when people are fighting for their jobs.'[5] This risk

[5] Interview with federal MP Andrew Leigh, Labor Party, conducted by the author in Canberra, Australian Capital Territory on May 19, 2015.

aversion should lead legislators to shift their focus to personal topics or other non-ideological tweet content when an election has been called. And campaign pressures should exert their strongest effects on legislators from competitive districts. When an election is called in a competitive district with a relatively even balance of left- and right-leaning voters, politicians should be especially wary of alienating some voters by sending out ideological tweets. District competition should thus bring a contextual interaction, heightening the impact of campaign timing.

Finally, the chamber in which an Australian legislator serves should influence the relative rates of personal versus ideological communication, again because the chambers feature different electoral systems. Ranked choice (preferential) voting is used to count votes in the single-member districts of the House. This means that House members can aim for a majority of the 'two-party preferred' vote by combining both the first-choice votes that they win themselves and the ballots of those who cast a first-choice vote for a minor party candidate but then a second-choice vote for the major party contestant. Knowing that votes for far-left or far-right minor parties will eventually flow back to them, the major party candidates can stay much closer to the median voter. By contrast, Senators run in proportional representation contests with (in most cases) twelve seats. Voters can vote for a single party, making this in practice a party list system. This gives candidates incentives to play to a narrow base and exerts a centrifugal force on their positions (Cox 1990). Legislators looking to please

the political centre should adopt a person-to-person style, while those who seek to rally their party faithful can risk the issue-based approach of ideological tweets.

> *Hypothesis 3. When a party controls the government, a smaller proportion of the tweets that its members send will be discernibly ideological.*
>
> *Hypothesis 4. When an election is called, a smaller proportion of the tweets that its legislators send will be discernibly ideological.*
>
> > *Interaction: This effect should be stronger in House districts that have narrow margins of victory than in less competitive House districts.*
>
> *Hypothesis 5. Compared to Senators (elected through PR), House members (who are elected in SMDs) will send a smaller proportion of discernibly ideological tweets.*

Explanation of Capitol Activity

Finally, and perhaps most importantly, when Australian politicians do adopt an issue-oriented style, one more decision remains. When they explain their Canberra, the dilemma that legislators face with each tweet is about whether to take a position that is consistent with their party's traditional side of the ideological spectrum, or to attempt to reach out across the ideological divide by taking a position that could have cross-over appeal to the other party or coalition. Compared to the avenues of mass media communication that were available to politicians just a decade ago, the rise of social media allows lawmakers greater control over this choice of how to present themselves. Penny Wong, Leader of the Opposition in the Senate, leverages the unfiltered nature of Twitter to set her own policy agenda when

she explains her capitol activity. 'When you do a media interview, you necessarily are broadcasting. What Twitter does allow you to do is to talk about issues that you wouldn't necessarily get to in an interview.'[6]

Because Twitter gives them the chance to explain their votes and positions exactly as they want, exactly when they want to, politicians should use it to craft their ideological profiles in response to shifting political dynamics. When it fits their strategic aims, they can send out tweets that are consistent with their party's side of the ideological spectrum. In other circumstances, they may benefit from taking positions that cross over into their competitor's ideological territory, just as Julie Bishop tweeted left-leaning stances when she served as Foreign Minister in the (right-leaning) Coalition government. Each legislator creates a portfolio of tweets that communicate their overall position on the ideological spectrum.

Serving in government, Bishop's example suggests, might be one factor that pushes lawmakers closer to the centre. In order to broaden their appeal and thus keep approval ratings for the government high, governing lawmakers have an incentive to mix in a few tweets with crossover appeal to the other party's voters. By contrast, members of the opposition may find the most advantage in drawing clear contrasts between their positions and the government's by tweeting stances that are consistent with their traditional ideology.

---

[6] Interview with federal Senator and Leader of the Opposition in the Senate Penny Wong, Labor Party, conducted by the author in Adelaide, South Australia on July 10, 2015.

Politicians also face clear incentives to present themselves strategically during campaigns, though it is not perfectly clear which ideological direction they should pursue during a contest. One strategy would be to attempt to win new supporters by tweeting many positions that cross over into the other party's traditional ideology. This can broaden support, though it may come at the expense of appearing opportunistic.[7] Another reasonable choice would be to take a position more in line with party orthodoxy during an election, sending a mixture of tweets that fits the preferences of the party's electoral base. This motivates voters who share those positions, and reassures all types of voters that a politician is authentic and consistent in her ideological message. When candidates campaign through other media platforms, we see examples both of politicians playing to their base or attempting to win crossover support. Twitter gives us a new realm to test directly when a lawmaker projects a different ideology when an election is called.

Hypothesis 6. When a party controls the government, its members will tweet more positions that appeal to the other party's ideological base than they do when serving in the opposition.

Hypothesis 7. When an election is called, legislators will seek crossover support by sending more tweets that match the other party's traditional ideological position.

Hypothesis 7 Alternative. When an election is called, legislators will play to their base by sending more tweets that match their

[7] Whether a politician plays to her base or seeks crossover support may depend upon her position within her party: top cabinet and shadow cabinet leaders seeking to appeal to a national constituency may shift toward the center during a campaign, while rank-and-file legislators may tweet to their party bases. I test this potential interaction effect in my multivariate analysis.

traditional ideological position.

Measuring Ideology Through Tweets

In this project, I used a supervised learning approach to gauge ideology from the text of tweets. In the Online Appendix , I describe in detail how I worked with a team of research assistants to code the ideology of an initial set of 2500 tweets, then use the human codings to train machine learning algorithms to replicate this categorization for the full corpus of all 291,091 tweets sent by Australian legislators through August, 2015. In the main text, I demonstrate the validity of this approach by addressing three key questions. First, can human coding of tweets demonstrate intercoder reliability and face validity, with human coders agreeing with each other and placing tweets in categories that make sense to other researchers? Second, can machine-learning algorithms trained to replicate the coding decisions of humans do so with precision? Third, when I use the categorizations of their tweets to locate Australian politicians on the ideological spectrum, do these measures match other data on their positions and does elite ideology line up with the preferences of voters?

Research assistants coded each tweet as either left-leaning, right-leaning, or non-ideological (a category that included tweets which were either completely apolitical or politically neutral, such as tweets advocating better health in the population or expressing shock at a violent incident). This single, three-category variable is then the basis of my analysis below of

both personal vs. ideological tweeting (in Tables 2 and 3) and of right-leaning vs. left-leaning tweeting (in Table 4 and Figure 4). The Appendix reports that the team recorded strong levels of intercoder reliability (with agreement scores averaging 83% across pairs of coders for this variable, and a Cohen's kappa of 0.75) and provides evidence that the algorithms were able to replicate these human codes with a high degree of precision and recall (exceeding 71% in all cases individually, and correctly replicating the human codes in 80% of cases through an ensemble approach). These levels of predictive validity compare favourably to prior work.

Figure 1 displays the percentage of tweets that fall into each of the three categories, first according to the human codings in my training set of 2500 and then according to the algorithms used to code the full corpus. About half of the tweets are communications with no ideological content. This is an important reminder that Australia's politicians do not use Twitter only for stump speeches. Often, they are using the immediacy and intimacy of social media to give their followers a window into their meeting schedules, frustrations with traffic, sporting loyalties, and menu choices. (I use the term 'personal' to describe these non-ideological tweets hereafter, while acknowledging that this category includes other types of non-ideological tweets – such as information about community events or congratulatory tweets to people who are not political figures – that do not contain personal revelations.) But the other half of their tweets show discernible ideological leanings, either to the right or, slightly more often, to the left. For each

individual, I create two scores. First, I record the percentage of each politician's total tweets that are non-ideological, a measure of the more personal tweets that would follow from a person-to-person tweet style. Second, I assign each officeholder an ideological score that records the percentage of that politician's ideological tweets that lean to the right.

[Figure 1 About Here]

This score places every Australian politician on the left-to-right ideological spectrum, based on Twitter communication. What evidence do we have that this produces a sensible, coherent ideological map? A unique and useful survey of candidates for federal office fielded by the Australian National University after every election provides an anonymous look at the positions of 192 politicians who can be grouped by party. Jackman (1998), which provides a rigorous ideological scaling of the Australian parliament, relies on this source. The 2013 Australian Candidate Study (McAlister et al. 2013) asks 28 policy questions, which I treat like roll calls and use optimal classification (Poole et al. 2014) to place each candidate on a left-to-right ideological spectrum.

The first graph in Figure 2 groups candidates into parties, based on this elite survey. It shows that Labor Party members generally take policy positions on the left while members of the Liberal-National Coalition are more often on the right, though there is considerable overlap between the two parties. To test convergent validity, the second graph in this figure shows the tweet-based ideological scores of politicians, grouped the same

way. The ideological score is the percentage of ideological tweets that are right-leaning, with neutral tweets removed from analysis. Again, Labor legislators are consistently on the left, with the Coalition on the right. Again there is significant overlap between the two parties. Ordering politicians by their ranks on these two scales further confirms their convergence.[8] One advantage of the tweet-based measure is that, because it is not anonymous, one can identify the leaders in this area of overlap: Coalition moderates like Foreign Minister Julie Bishop and Andrew Southcott are indeed in the overlap zone, as are 'Labor Right' faction leaders such as Chris Bowen and Richard Marles. Their placement provides further confidence that this measure effectively captures ideology.

[Figure 2 About Here]

Finally, Figure 3 provides a test of predictive validity: If tweets are a reliable measure of ideology, then the positions of politicians on Twitter should match the preferences of voters in their districts. This scatterplot charts, for each House of Representatives district, the 2013 share of the vote won by the Coalition candidate (the 'two-party-preferred vote, by division,' gathered from Australian Election Commission, 2015) against the proportion

[8] Ranking MPs by the percentage of ideological tweets that are right-leaning, the most leftist Coalition member (Julie Bishop) is in the 18th percentile, while the most right-leaning Labor politician (Richard Marles) is in the 68th percentile. The "party overlap" interval thus runs for 50 percentile points. Ranking candidates who responded to the poll (a group that consisted of more Labor candidates than Coalition), the "party overlap" interval ranges from the 44th percentile to the 88th, or 44 percentile points. The similarity between these overlap ranges confirms the convergence between these two measures of ideological position.

of ideological tweets by the eventual winner that leaned to the right. The strong positive relationship shows that more conservative districts elected legislators who tweeted more conservatively. This confirms the predictive validity of the measure, while providing evidence that social media communication responds to electoral signals in Australian politics.

[Figure 3 About Here]

Predicting Tweet Style: The Impact of Governing and Campaigns

Allocation of Resources

My first analysis is of the simplest statistic: the number of tweets sent by each sitting legislator from the date of the September 2013 election until August 2015, when I collected every member's data. Tweet frequency measures the allocation of a politician's precious resource of her time, and ranges from zero (in the cases of the 62 legislators who did not have a Twitter account, making up 27% of the House and Senate combined) to the 3,284 tweets sent by Greens Party MP Adam Bandt, whose 'sophisticated understanding of how social media works' was lauded as key to his surprising win in a Melbourne constituency.[9] The average number of tweets was 877. Just as Fenno's MCs flew back to their districts more often and invested in local offices when they faced electoral threats, Australian politicians should tweet more when political pressures are highest. One initial piece of evidence for this contention is that Twitter usage spiked for all members in the month leading up to the 2013 election. Combined,

[9] Quote taken from Van Badham, "Adam Bandt's Victory in Melbourne is No Fluke, And That's Worth Celebrating," *The Guardian*, September 8, 2013.

Australian lawmakers tweeted 11,246 times during that month, up from 6,467 during the previous 30 days. The month after the election, they took a social media vacation, tweeting only 4,234 times.

Are there systematic patterns in which types of legislators tweet the most? One obvious confound is the age of a legislator, which I control for in a multivariate model, but I begin with a bivariate exploration of the theory-driven variables. Hypothesis 1 predicts that the tweeting rate of House members should be higher than the rate of senators, because they run for office more frequently and do so in single-member districts. Since the 2013 election, House members sent an average of 983 tweets, while senators tweeted 626 times, a difference in means that is statistically significant at the $p<0.05$ level. Hypothesis 2 asserts that lawmakers should tweet more often when they represent tightly competitive House districts. At first glance, there is some apparent link: Legislators in districts with a margin of victory closer than ten percentage points tweet an average of 1,054 times, those in districts with margins between ten and twenty points tweet 897 times, and those who won by more than twenty points tweet 824 times. Yet this effect is neither strong nor significant in a difference in means test.

The ordinary least squares models presented in Table 1, which control for a legislator's gender, age, position in the cabinet, and party affiliation, test these hypotheses in multivariate models. The results in the first column, a model using data from all legislators, provide strong evidence consistent with Hypothesis 1: House members tweet more often, sending an average of

438.6 more tweets, all else equal. This is significant at $p<0.01$. Not surprisingly, younger lawmakers also tweet more, sending about 23 more tweets for every year younger they are ($p<0.01$). The second column tests Hypothesis 2's conjecture that more competition leads to more tweeting, by comparing House members based on the margins of victory in their districts. As in the bivariate test, it does not exert a significant impact. House members, who run in single-member districts, and younger legislators are the lawmakers who allocate more of their time to tweeting.

[Table 1 About Here]

Presentation of Self

To test Hypotheses 3-5, I use the supervised learning coding of tweets as ideological or not in order to ask when politicians communicate in a person-to-person style and when they pursue an issue-oriented approach. In these analyses, the dependent variable is a dichotomous measure indicating that a tweet had no discernable ideological content. When leaders use Twitter to build trust with voters by making a personal connection– perhaps by talking about sitting in traffic, rooting for a sports team, or eating a local food – more of their tweets should be non-ideological.

In this and in all analyses that follow, my sample is the set of legislators sitting in Australia's national parliament in 2015 who had Twitter accounts. According to my hypotheses, politicians should shift toward this sort of person-to-person communication when the risks of an issue-based

approach are highest: When their party is in government, and during a campaign (especially when they represent a competitive district). Australian politics in the social media era provides a strong research design for conducting these tests. With the 2013 election bringing a switch in party control just around the midpoint of our time period, I can compare how a given politician tweeted differently in and out of government and before, during, and after an election. Because this comparison is only possible for those who served both before and after the election, I remove the tweets of all members newly elected in 2013 from this analysis. By using legislator fixed effects, then, I can hold constant the political characteristics and individual idiosyncrasies of each politician, isolating the impacts of governing and campaigning. I also report cluster-robust standard errors, clustered by legislator, because errors and error variances are likely correlated across the messages tweeted by each lawmaker (see Cameron and Miller 2015).

The models presented in Table 2 use this approach, presenting the results of linear probability models with legislator fixed effects that evaluate the impact of the two factors that shift over time. When, exactly, did these shifts occur? The Labor Party captured control of the government in 2007, before the first tweet appears in our dataset. On January 30th, 2013, Labor Prime Minister Julia Gillard announced that an election would be held on September 14th of that year,[10] leading to 'a surreal seven-and-a-half months of campaigning (Johnson, Wanna, and Lee 2015, 1).' That campaign became

[10] See Judith Ireland and Daniel Hurst, "PM Announces Election for September 14th," *Sydney Morning Herald*, January 30th, 2013.

even more extraordinary in June when Gillard was overthrown by fellow Labor MP Kevin Rudd, whom she had unseated three years earlier when he was serving as prime minister.[11] Rudd then scheduled the election for September 7, hoping to capitalize on the sharp rise in his party's chances of winning – as documented in the election betting markets data collected by Jackman (2015, 146) – that followed the dramatic 'leadership spill.' Yet that proved to be a temporary bump, with the Liberal-Nationals Coalition winning an overwhelming victory and bringing Prime Minister Tony Abbot into office in September, 2013 (until he, too, was overthrown after my period of study ended). All of this political turmoil provides a strong interrupted time-series design. I code my 'Election Has Been Called' variable as '1' for the January 30-September 7th, 2013 period, and my 'Legislator's Party is in Government' variable as '1' for Labor Party members before September 7, 2013 and '1' for Liberal and Nationals legislators thereafter.

[Table 2 About Here]

As the first results column in Table 2 shows, Australian politicians tweet differently when they are in or out of government and during campaigns. Consistent with Hypothesis 3, the likelihood that a tweet is non-ideological rises by 4 per cent when a legislator's party is in government, compared to being in the opposition. This effect is strongly significant ($p<0.01$), and consistent with what a simple bivariate analysis shows.[12]

[11] See James Grubel, "Rudd Sworn in as Australian PM After Overthrowing Gillard," June 27, 2013, *Reuters*.

[12] In a simple comparison that does not also account for the impact of campaigns or consistent differences across parties, 61.0% of the tweets by

There is also a clear election-year effect that is in keeping with Hypothesis 4: when Gillard called elections, the likelihood that a tweet is safely non-ideological rose by 2 per cent on average. Again, this effect is strongly significant ($p<0.01$).

Drawing on Fenno's logic, though, election effects should depend upon the heterogeneity of a legislative district. In a homogenous constituency that sides strongly with one party, ideological tweeting might be safe even under the pressure of a campaign, while campaign effects will be felt most sharply in competitive, heterogeneous districts. For House members, I can test this

interaction. The second column of results repeats the baseline model, throwing out Senate members. It shows that the significant impacts of governing and campaigning remain when I isolate House members. Yet the interaction between the campaign indicator and the margin of victory in a House district, while it moves in the expected direction, falls far short of significance.

To test Hypothesis 5's conjecture that House members will tweet less ideologically than Senate members because of the different electoral systems through which they are selected, I cannot use a fixed effects analysis because so few legislators switch houses. Consequently, the regression model in Table 3 simply analyzes each legislator's overall rate of non-ideological tweeting with the same set of control variables used in my

---

governing party legislators are non-ideological, while 53.1% of opposition party tweets are non-ideological.

analysis of tweet frequency. The results show that House members have a higher likelihood of sending non-ideological tweets than senators. Though there are of course systematic differences between senators and House members other than their electoral systems, this effect is consistent with the hypothesis that the centripetal pressures of single-member districts encourage a person-to-person tweet style, while senators elected by proportional representation are more free to express their ideologies to a narrower electoral base. I also find that cabinet or shadow cabinet members are more likely to risk ideological tweets, while backbenchers tweet more about non-ideological matters. All of these effects are significant at $p<0.01$.

[Table 3 About Here]

Explanation of Capitol Activity

When politicians do adopt an issue-oriented style by sending out ideological tweets, do they take positions in line with their party's traditional alignments or do they often cross over to the other side of the political spectrum? In Hypothesis 6, I predicted that legislators whose party was in power would be more likely to send crossover tweets in order to broaden the government's popular support, while lawmakers in opposition will seek to draw sharp contrasts by tweeting in line with their traditional party positions. Hypothesis 7 predicts that during campaign all legislators will send more crossover tweets, while a plausible alternative hypothesis is that they will play to their base when they tweet during election season.

Table 4 estimates models predicting whether an ideological tweet points in the direction of a legislator's party base -- to the left for Labor Party members or to the right for Liberals and Nationals. (The Greens are excluded because their members never served in government.) As in Table 2, a single tweet is the unit of observation, and the models include legislator fixed effects to show how governing and campaigns alter a given politician's communications style. Only ideological tweets are included in the models, with neutrals tweets removed.

[Table 4 About Here]

Consistent with Hypothesis 6, governing pushes members toward a more centrist explanation of their capitol activity, with the likelihood that an ideological tweet leans toward the party's base decreasing by 11 per cent when that party holds office. This effect is strongly significant at the $p<0.01$ level. Yet this effect only holds for the Labor Party. An interaction between the governing variable and membership in the Coalition almost wholly counteracts the main effect,

showing that the direction in which Liberal and Nationals legislators tweeted was not affected by whether they were in or out of government. Still, for Labor legislators, governing clearly matters.

The dynamic that alters the behavior of all parties is campaigning: After the 2013 election was called, Labor politicians increasingly played to their left-leaning base, while the Liberal and Nationals tweeted more consistently to the right. During the campaign, the likelihood that a tweet

leaned toward each party's base rose by 3 per cent. There is no significant interaction with party for this campaign effect, and separate models (not reported) run for each party reveal consistent effects.

The fact that all of the parties play to their base during a campaign, rather than crossing over to the center, is surprising and fits not with Hypothesis 7 but with the alternative conjecture. Still, it is a plausible electoral tactic that appears to be pursued by parties on both sides of the ideological spectrum. It is also, as the results in the second column show, a tactic that is pursued as much by cabinet members as by backbenchers. I interacted frontbench status with the election year indicator, and also with the governing indicator. Neither interaction was significant, showing that a legislator's position the parliamentary hierarchy does not condition the impact of governing or campaigning.

Finally, I illustrate the strong impact of campaigning on tweet style in the time series graph of Figure 4. Not based on any regression, it simply shows the percentage of tweets sent by Coalition legislators that were right leaning in the periods before, during, and after the 2013 election. Clearly and significantly, they play toward their base while campaigning and then move back to the center. The right-leaning percentages of tweets by coalition members are nearly identical before (53.2%) and after (52.4%) the election, but rise substantively and statistically significantly during the election to 60.9%.

Conclusion

The central message of this analysis is that politicians change their social media communication strategies when political circumstances change, responding rationally to the demands of governing and campaigns. Australian legislators adapt their tweet styles to changing incentives in much the same way that members of the US Congress shape their home styles to their districts (Fenno 1977). They allocate more of their time to tweeting if they serve in the Australian House rather than the Senate, perhaps because serving for shorter terms brings more political jeopardy. Members of both chambers shift away from issue-oriented ideological tweets when their party holds government, instead adopting a 'personalized' style by tweeting more about the uncontroversial details of their daily lives. During campaigns, lawmakers also shy away from ideological tweeting, especially if their district is electorally competitive. Finally, when an election is called, members of Australia's three major parties tweet toward their party's traditional ideological direction rather than seeking cross-over appeal

This finding is striking, because it departs from the Downsian drift toward the center sometimes observed in other mediums of political communication. Yet it is consistent with influential works on US House elections showing that candidates diverge on the ideological spectrum, contrary to simple Downsian logic (Sullivan and Minns 1976, Ansolabehere, Snyder, and Stewart 2001, and Burden 2004). Is this dynamic encouraged by Twitter? Perhaps this is enabled by the fact that Twitter's audience is far from universal. With only one in five Australians on Twitter, and far fewer

following any individual politician, it may be that Twitter gives lawmakers the opportunity to speak to a narrow, segmented audience, preaching to their choir and delivering different messages than they would through broadcast media. This suggests further areas of study, such as comparing political communication over Twitter to the messages that politicians convey on Facebook. That platform reaches 95% of Australians on the internet (Bruns and Moon 2018, 427). Comparing messages across these two platforms, and with traditional mass media outlets, could teach important lessons about how the choice of medium affects messaging strategies.

Finally, this study introduces and validates an approach to studying politicians on Twitter – the combination of human coding and machine learning – which complements existing methods for studying a form of political communication that is rapidly becoming a critical way for politicians to reach voters, in Australia and around the world.

References

Ansolabehere, Stephen, James M. Snyder, Jr., and Charles Stewart III. 2001. "Candidate Positioning in U.S. House Elections." *American Journal of Political Science* 45(1):136-159.

Australian Election Commission. 2015. "Two-Party Preferred by Division." Accessed at http://results.aec.gov.au/17496/Website/HouseTppByDivision-17496-NAT.htm in November 2015.

Barbera, Pablo, John T. Jost, Jonathan Nagler, Joshua A. Tucker, and Richard

Bonneau. 2015 "Tweeting from Left to Right: Is Online Political Communication More Than an Echo Chamber?" *Psychological Science* 25(10):1531-1542.

Barbera, Pablo. 2015. “Birds of the same feather tweet together: Bayesian ideal point estimation using twitter data.” *Political Analysis* 23(1): 76–91.

Bruns, Axel and Tim Highfield. 2013. “Political Networks on Twitter.” *Information, Communication and Society* 16(5):667-691.

Bruns, Axel and Brenda Moon. 2018. “Social Media in Australian Federal Elections: Comparing the 2013 and 2016 Campaigns.” Journalism and Mass Communication Quarterly 95(2):425-448.

Burden, Barry. 2004. “Candidate Positioning in U.S. Congressional Elections.” *British Journal of Political Science* 34:211-227.

Cameron, Colin and Douglas L. Miller. 2015. “A Practitioner's Guide to Cluster-Robust Inference,” *Journal of Human Resources* 50(2):317-373.

Cohen, Jacob. 1960. “A Coefficient of Agreement for Nominal Scales.” *Educational and Psychological Measurement* 20(1):37–46.

Cox, Gary W. 1990. “Centripetal and Centrifugal Incentives in Electoral Systems.” *American Journal of Political Science*. 34(4):903-935.

Enli, Gunn Sara and Eli Skogerbø. 2013. “Personalized Campaigns in Party-centred Politics: Twitter and Facebook as Arenas for Political Communication.” *Information, Communication & Society* 16(5):757-774.

Evans, Heather K. and Jennifer Hayes Clark. 2016. “‘You Tweet Like a Girl!’: How Female Candidates Campaign on Twitter.” *American Politics Research* 44(2): 326-352.

Evans, Heather K., Victoria Cordova, and Savannah Sipole. (2014) “Twitter-Style: An Analysis of How House Candidates Used Twitter in their 2012 Campaigns.” *PS: Political Science and Politics* 47(2): 454-462.

Fenno, Jr., Richard F. 1977. “U.S. House Members in Their Constituencies: An Exploration.” *The American Political Science Review*. Vol. 71(3):883-917

Graham, Todd, Dan Jackson, and Marcel Broersma. 2016. “New Platform, Old Habits? Candidates' Use of Twitter During the 2010 British and Dutch General Election Campaigns.” *New Media and Society* 18(5):765-783.

Graham, Todd, Dan Jackson, and Marcel Broersma. 2017. “The Personal in the Political on Twitter: Towards a Typology of Politicians’ Personalized Tweeting Behaviours.” In Julia Schwanholz, Todd Graham, and Peter-Tobias Stoll, editors, *Managing Democracy in the Digital Age: Internet Regulation, Social Media Use, and Online Civic Engagement.* Cham, Switzerland: Springer.

Graham, Todd, Marcel Broersma, Karin Hazelhoff, and Guido van’t Haar. 2013. “Between Broadcasting Political Messages and Interacting with Voters: The Use of Twitter During the 2010 UK General Election Campaign.” *Information, Communication & Society* 16(5):692-716.

Grant, Will J, Brenda Moon, and Janie Busby Grant. 2010. "Digital Dialogue? Australian Politicians' Use of the Social Network Tool Twitter." *Australian Journal of Political Science* 45(4): 579-604.

Hand, David J. 2006. “Classifier Technology and the Illusion of Progress.” *Statistical Science* 21(1):1-15.

Jackman, Simon. 1998. “Pauline Hanson, the Mainstream, and Political Elites: The Place of Race in Australian Political Ideology.” *Australian Journal of Political Science* 33(2): 167-186.

Jackman, Simon. 2015. “All that Glitters: Betting Markets and the 2013 Australian Federal Election,” in *Abbot’s Gambit: The 2013 Australian Federal Election*, edited by Carol Johnson and John Wanna, with Hsu-Ann Lee, Canberra, ACT, Australia: Australia National University Press.

Johnson, Carol, John Wanna, and Hsu-Ann Lee. 2015. “Introduction: Analysing the 203 Australian Federal Election.” In *Abbot’s Gambit: The 2013 Australian Federal Election*, edited by Carol Johnson and John Wanna, with Hsu-Ann Lee. Canberra, ACT, Australia: Australia National University Press.

Jungherr, Andreas. 2016. “Twitter Use in Election Campaigns: A Systematic Literature Review.” *Journal of Information Technology & Politics* 13(1):72-91.

King, Aaron S., Frank J. Orlando, and David B. Sparks. 2015. “Ideological Extremity and Success in Primary Elections: Drawing Inferences From the Twitter Network.” *Social Science Computer Review*.

Kruikemeier, Sanne, Guda van Noort, Rens Vliegenthart, Claes H de Vreese. 2013 “Getting Closer: The Effects of Personalized and Interactive

Online Political Communication." *European Journal of Communication* 28(1):53-66.

Landis, J. Richard and Koch, Gary G. 1977. "The Measurement of Observer Agreement for Categorical Data." *Biometrics* 33(1):159-174.

Lee, Eun-Ju and Soo Youn Oh. 2012. "To Personalize or Depersonalize? When and How Politicians' Personalized Tweets Affect the Public's Reactions." *Journal of Communication* 62(6):932-949.

McAllister, Ian, Clive Bean, Juliet Pietsch, and Rachel Gibson. 2013. Australian Candidate Study. [computer file]. Canberra: Australian Data Archive, The Australian National University, 2015.

McCandless, David, and Stephanie Posavec. 2010. "Left Government vs. Right Government," accessed at http://www.informationisbeautiful.net/visualizations/left-vs-right-us/ in October 2014.

McGregor, Shannon C, Regina G. Lawrence, and Arielle Cardona. 2016 "Personalization, Gender, and Social Media: Gubernatorial Candidates' Social Media Strategies." *Information, Communication and Society* 20(2):264-283.

Parliament of Australia, 2016. "Senators and Members Search Results." Accessed at http://www.aph.gov.au/Senators_and_Members/Parliamentarian_Search_Results?q=&mem=1&par=-1&gen=0&ps=0 in March 2016.

Poole, Keith, Jeffrey Lewis, James Lo and Royce Carroll. 2014. *OC Roll Call Analysis Software*. Accessed at https://cran.r-project.org/web/packages/oc/index.html in March 2015.

Sullivan, John L. and Daniel Richard Minns. 1976. "Ideological Distance between Candidates: An Empirical Examination." *American Journal of Political Science* 20(3):439–68.

Vergeer, Maurice. 2015. "Twitter and Political Campaigning." *Sociology Compass* 9(9):745-760.

Figure 1. The Distribution of Tweets Across Ideological Categories

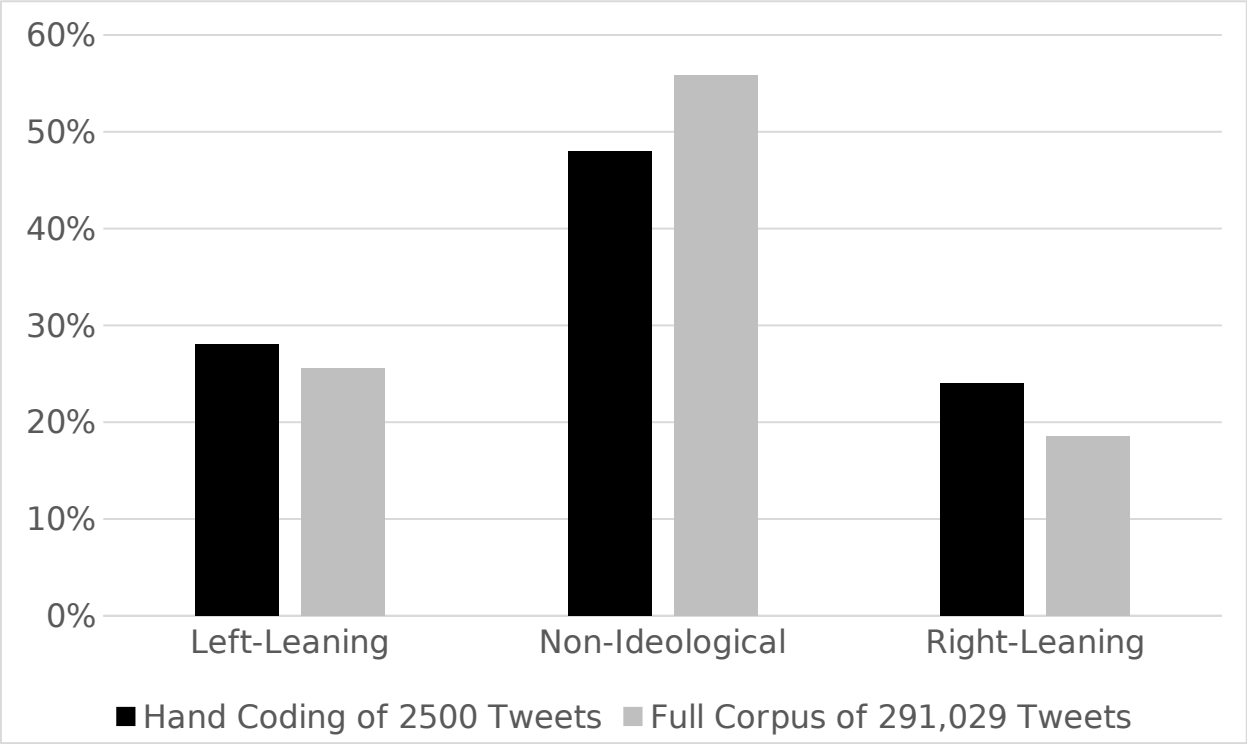


Figure 2. Convergent Validity: Comparing Positions in Survey with Tweet Ideology

Figure 2A. Scaled Ideology from 28 Questions in 2013 Australian Candidate Survey

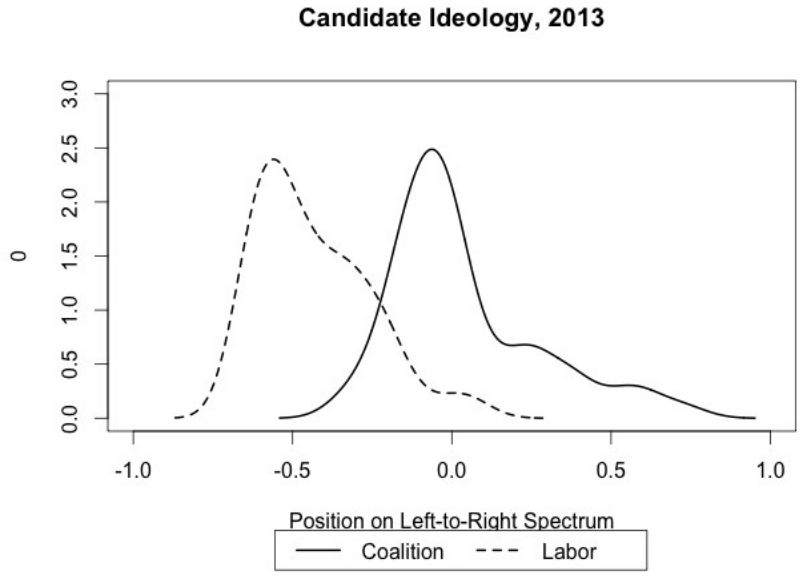


Figure 2B. Ideology from Tweets by House Members Elected in 2013

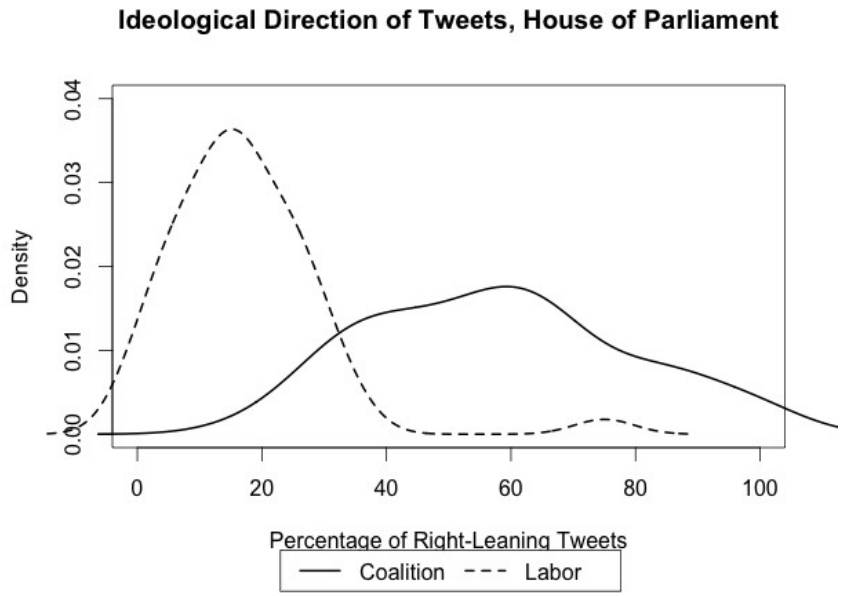


Figure 3. Predictive Validity: Do Constituent Voting Patterns Predict Tweets?

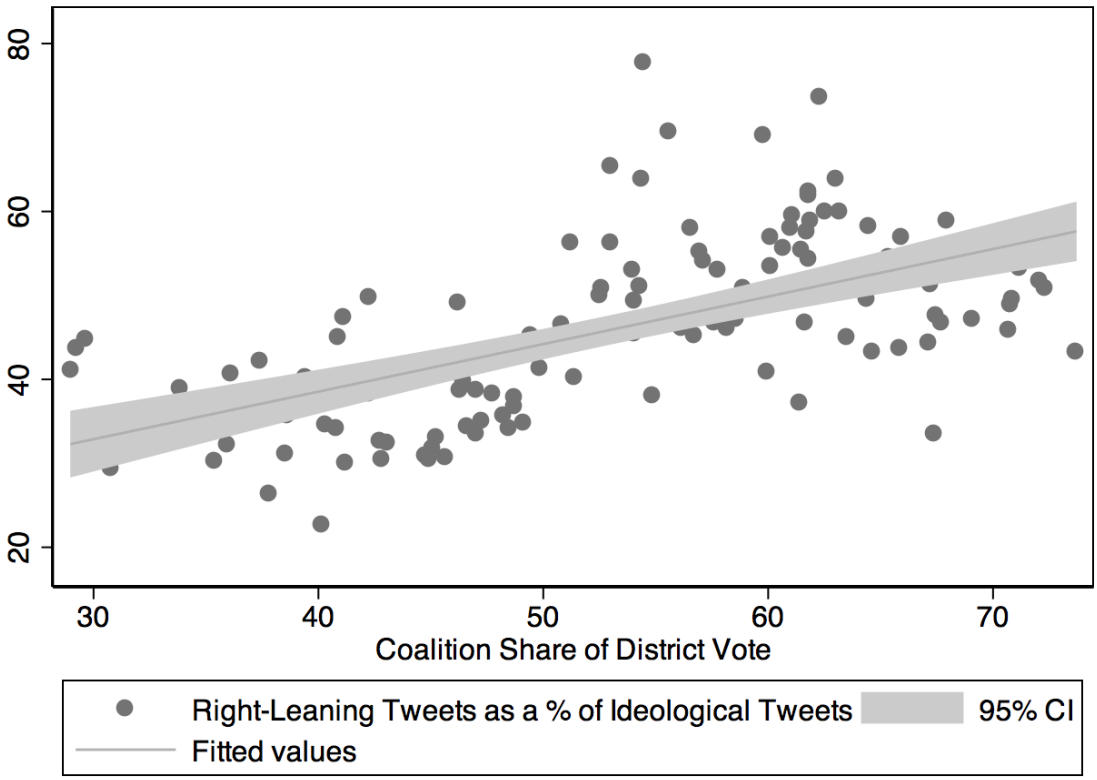
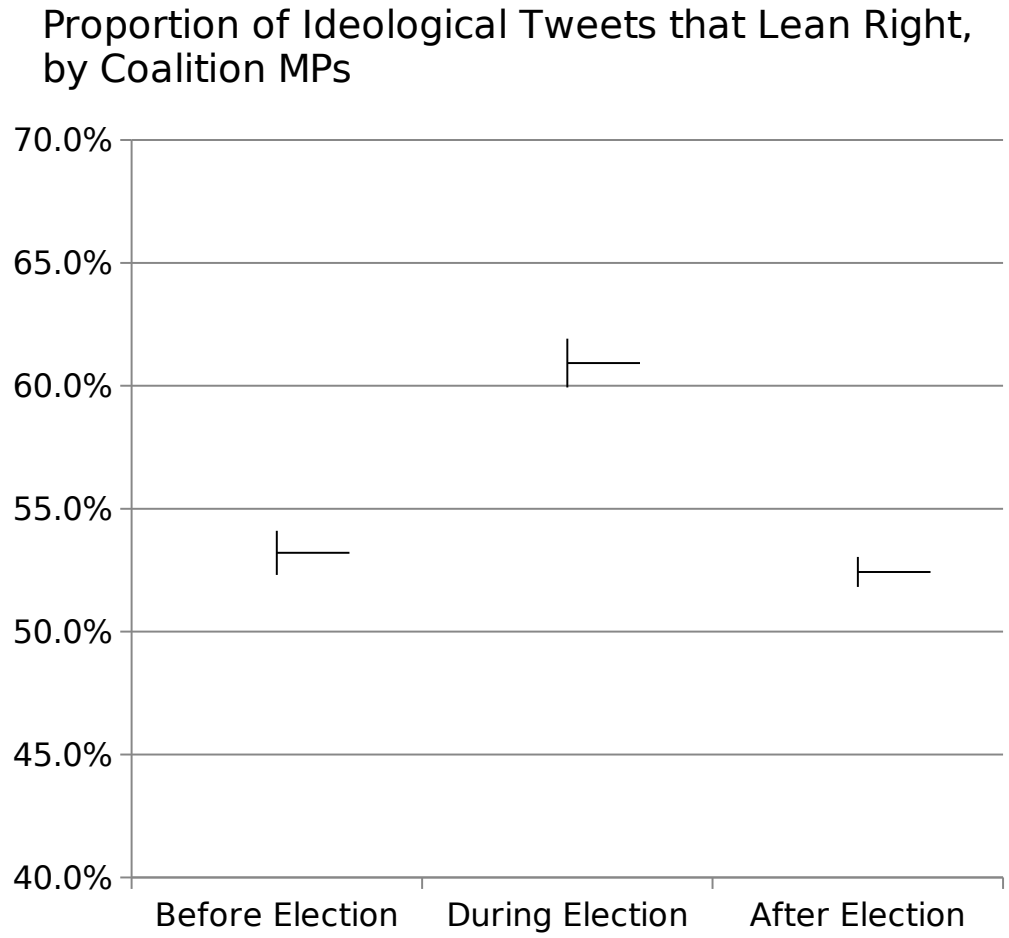

80
60
40
20
30
40
50
60
70
Coalition Share of District Vote
Right-Leaning Tweets as a % of Ideological Tweets
95% CI
Fitted values

Figure 4. The Impact on Campaigning on Tweeting to the Ideological Base



Notes: Error bars represent 95% confidence intervals around the proportions

Table 1. Predicting Tweet Frequency Since the 2013 Election

	Both Chambers	House Only
House (Rather than Senate)	438.60**	
	134.28	
Margin of Victory		8.35
		6.59
Age	-23.45**	-22.13**
	6.93	8.37
Male Legislator	-202.00	-105.52
	140.94	176.06
Frontbencher (Cabinet or Shadow)	111.77	-7.97
	167.44	192.36
Greens Party	1,734.39	1,392.74
	926.11	934.69
Liberal Party	-719.07**	-923.32**
	134.67	164.62
Nationals Party	-623.30**	-954.75**
	229.80	282.82
Constant	2,271.18**	2,576.89**
	385.74	451.39
Observations	222	149
R-squared	0.23	0.27

*Notes: Table entries are coefficients and standard errors in ordinary least squares regressions. The omitted baseline party is the Labor Party. ** indicates p<.01, * indicates p<.05*

Table 2. Predicting Personal (vs. Ideological) Tweeting, by tweet

	Both Chambers	House Only
Legislator's Party is in Government	0.04**	0.03**
	0.008	0.009
Election Has Been Called	0.02**	0.03**
	0.005	0.012
Interaction of Election Year and Margin of Victory		0.0005
		0.0005
Constant	0.54**	0.56**
	0.003	0.004
legislator fixed effects	included	included
legislator clustered errors	included	included
Observations	291,091	217,425
R-squared	0.01	0.01

*Notes: Table entries are coefficients and clustered standard errors in ordinary least squares regressions, with individual legislator fixed effects included. ** indicates p<.01, * indicates p<.05*

Table 3. Predicting Personal (vs. Ideological) Tweeting, by politician

	Legislators Both Chambers with Twitter Accounts	Legislators in House with Twitter Accounts
House (Rather than Senate)	6.02**	
	1.30	
Margin of Victory		0.04
		0.06
Age	0.04	0.12
	0.07	0.07
Male Legislator	0.79	1.41
	1.31	1.50
Frontbencher (Cabinet or Shadow)	-3.94**	-4.51**
	1.41	1.53
Greens Party	-6.73	-7.18
	7.35	7.20
Liberal Party	5.86**	5.93**
	1.26	1.42
Nationals Party	6.60**	5.61*

	2.31	2.71
Constant	48.72**	49.72**
	3.55	3.92
Observations	162	118
R-squared	0.30	0.28

*Notes: Table entries are coefficients and standard errors in ordinary least squares regressions. The omitted baseline party is the Labor Party. ** indicates p<.01, * indicates p<.05*

Table 4. Predicting Base-Leaning Tweets, when a Tweet is Ideological

	All Legislators Serving Before and After Election	All Legislators Serving Before and After Election
Election Has Been Called	0.03**	0.04**
	0.01	0.01
Legislator's Party is in Government	-0.11**	-0.10**
	0.01	0.01
Interaction of Government X Coalition	0.10**	0.10**
	0.02	0.017

Interaction of Election X Frontbencher		-0.01 0.02
Interaction of Govt. X Frontbencher		-0.02 0.02
Constant	0.61** 0.003	0.61** 0.003
Observations	93,745	93,745
legislator fixed effects	included	included
legislator clustered errors	included	included
R-squared	0.004	0.001

*Notes: Table entries are coefficients and clustered standard errors in ordinary least squares regressions, with individual legislator fixed effects included. ** indicates p<.01, * indicates p<.05*

Online Appendix: Categorizing Politicians' Tweets

How should political tweets be turned into a meaningful dataset? Prior studies have taken one of two approaches. Some scholars have looked

closely at a manageable number of tweets, using their expertise or teams of research assistants to categorize the text that they contain (Graham et al. 2013, Evans and Clark 2016, Graham et al. 2016, 2017). Other scholars use computing tools to quantify whether political tweets are original, retweets, or interactions (Grant et al. 2010, Bruns and Highfield 2013, Bruns and Moon 2018). Additional work has substituted artificial intelligence for human judgement, leveraging the power of "unsupervised learning' techniques to capture the sentiment of a massive number of tweets (Murthy 2015)[13] or by using the social networks of Twitter followers to infer the ideology of politicians and their followers (Barbera 2015, Barbera et al. 2015, King, Orlando, and Sparks 2015). Some have even attempted to predict elections through tweets (but see Metaxes et al. 2011).[14]

This paper adopts a method designed to leverage the strengths of both approaches, by combining human with artificial intelligence. The first step in the supervised learning approach to classifying text is for human coders to study documents closely and then to place them into categories. This application to Twitter raises the initial questions of whether coders can judge the ideology of politician's tweets in a way that is consistent across coders and which makes sense to a broader research community. Since the initial coders for this project were three undergraduate research assistants working

[13] Murthy, Dhiraj. 2015. "Twitter and Elections: Are Tweets, Predictive, Reactive, or a Form of Buzz?" *Information, Communication & Society* 18(7): 816-31.
[14] Metaxes, Panagioti T., Eni Mustafaraj, and Dani Gayo-Avello. 2011. "How (Not) to Predict Elections." International Conference on Social Computing.

at an American public university, the first task was to familiarize them with the way in which contemporary issues translated onto the political spectrum in Australia. Though geographically distant, Australia's politics are not completely foreign to the United States. The researchers and the author spent a month reading Australian newspapers, including the *Sydney Morning Herald*, the *Adelaide Advertiser*, the *Australian*, and the [Melbourne] *Age*, and consulting sources that list 'left' and 'right' beliefs (McCandless and Posavec 2013), to compile the list of issue positions on each side listed in Appendix Table A.1. This table was the basis of a set of coding instructions that asked the researchers to code tweets as either left-leaning, right-leaning, or non-ideological (a category that included tweets which were either completely apolitical or politically neutral, such as tweets advocating better health in the population or expressing shock at a violent incident).

Table A.2 gives examples of the types of tweets that the researchers placed into each category. Right-leaning tweets trumpet efforts to cut through red tape, to stop illegal immigrants from arriving by boats from Southeast Asia (the common 'stop the boats' refrain, similar to American proposals to 'build the wall'), to repeal a tax on carbon emissions, and to repeal a Mining Tax, as well as a 2014 visit by Julie Bishop, the Liberal Party's Minister of Foreign Affairs, to the site of the controversial war in Iraq. Left-leaning tweets include a discussion of a rally for renewable energy and a condemnation of off-shoring jobs, an attack on a gendered phrase, and support for an NGO, The Gender Agency, which is according to its website is

aimed at ‘transforming the gender status quo in peace, conflict, development, and humanitarian affairs.’ Note that the source of this tweet again turned out to be Julie Bishop, demonstrating that the ideological coding of tweets is not perfectly aligned with or dictated by party affiliation (which was blinded to all of the coders). Finally, many, many tweets turn out to have no ideological content whatsoever. They may report on a factory that then-Prime Minister Tony Abbot visited one day, allow Leader of the House Christopher Pyne to broadcast which minor-league Australian Rules Football team he supports, or inform followers about what the Deputy Leader of the Opposition ate for lunch.

Each of the three researchers then coded 100 different tweets, and we met weekly to discuss how to resolve difficult cases. Next, to assess whether our coding approach yielded sufficient intercoder reliability, I created a common sample of 250 tweets,[15] including 50 tweets each from a Labor Party MP, a Liberal Party MP, a Green MP, and from the official accounts of the Australian Labor Party and the Liberal Party of Australia. The identity of each tweet’s source was removed from the files that the research assistants worked with, and they worked independently from each other at this stage of the process. Their categorization of this common set of tweets allowed me

[15] Ultimately, the coders were only able to code 243 of these tweets, because seven consisted only of URLs or fragments of words. In my analysis of the full corpus of tweets, I also had to delete all tweets that did not contain at least one English word (which is necessary to create a document-term matrix using RTextTools, and indeed for any algorithm or human to make sense of a tweet. Out of the full set of 296,741 tweets by Australian politicians through August 2015, I removed 5,650 tweets (or 1.9%) because they did not contain at least one English word, leaving a corpus of 291,091 to categorize.

to assess intercoder reliability across pairs of researchers. In 84% of cases, the coding by Researcher A matched that of Research B, with Researchers B and C agreeing 86% of the time and Researchers A and C matching in 80% of cases. This is a strong level of agreement for a coding exercise in which there are three possible outcomes. Calculating the 'Cohen's kappa,' which asks how much better this level of agreement is than what we might expect due to chance alone,[16] demonstrates that these coders classified the ideology of tweets in a reliable, consistent manner.

After this successful exercise, I worked with the research assistants to code a total of 2500 tweets by hand.[17] Then I used the software package RTextTools[18] to turn tweets into bag-of-word matrices that list the frequency

[16] For instance, Researchers A and B agreed at a rate of 84%. Based on the distribution of their codings across the three categories, they would have agreed due to random chance alone in only 36% of cases. Cohen's kappa measures this improvement in classification divided by the expected random error rate, and is thus (0.84-0.36)/(1–0.36) = 0.48/0.64=0.75. Although there is no clear cut-off for acceptable levels of kappa, Landis and Koch (1977) consider a kappa between 0.61 and 0.80 as indicating "substantial agreement," and a kappa of 0.81 or above as evidence of "almost perfect agreement." The Cohen's kappa measures in the high end of the "substantial agreement" range for all three pairs of research assistants.

[17] While it would have been ideal to randomly sample the training set of 2500 tweets from the full corpus of tweets that I aimed to analyze (see Hand 2006), I encountered an obstackle: this corpus (tweets collected through August 2015) had not been produced by the fall of 2014, when the training set needed to be coded. I created a stratified sample instead, aided as maximizing the ideological diversity of the training tweets, by including tweets from legislators and party leaders from all four major parties (Labor, Liberal, National, and the Greens) in rough proportion to their representation in the lower house, with the partisan identity of the tweeter redacted from the coding sheet.

[18] See Jurka, Timothy P. Loren Collingwood, Amber E. Boydstun, Emiliano Grossman and Wouter van Atteveldt. 2012, "RTextTools: Automatic Text Classification via Supervised Learning," R package version 1.3.9.

of each term used in the document. Using 2200 tweets as the training set, I trained the nine machine-learning algorithms included in RTextTools to reproduce the human classifications, and then tested the accuracy of each algorithm on the remaining 300 tweets in the testing set. For these testing set tweets, the algorithm had to predict which category humans placed the tweet in without first accessing that information. I identified the three best-performing algorithms, which each registered levels of 'precision' (how often tweets put into a category by an algorithm were also placed there by hand coders) and of 'recall' (how often the tweets hand coded into a category were also placed there by an algorithm) that ranged between 71% and 76%. I then reran the training with only these three algorithms, finding that all three algorithms agreed on a coding in 85% of cases, and that the recall of the hand coded category was correct in 80% of these cases. The most discriminant words – 'debt,' 'carbon,' 'job,' 'school,' 'stop,' 'boat,' 'welfare,' 'tax,' and 'smallbiz' – are all closely related to current Australian political disputes. This provided enough confidence to train the algorithms on all 2500 hand-coded tweets, then use them to code[19] the full corpus of the

---

http://CRAN.R-project.org/package=RTextTools.

[19] In all of the analysis reported in the main text, I use a "probability coding" approach based on the categorizations from the three best-performing algorithms, putting each tweet in the corpus into the category given by the algorithm with the strongest probability of being correct. Another reasonable approach is the consensus coding method of putting a tweet into a category only if two or more of the three algorithms agree on that categorization. That approach puts more tweets overall into the "non-ideological" category, but replicating the individual analyses using this approach does not lead to substantively different results.

291,091 tweets[20] sent from the official Twitter account[21] (if one existed)[22] of every sitting member of the Australia House of Parliament and Senate as of August, 2015, as well as the accounts of the Australian Labor Party, the Greens, the Liberal Party of Australia, and the Nationals.

[20] The tweets were obtained by first compiling a list of all Australian members of parliament who had created or maintained a Twitter profile as of August 2015. That list of Twitter usernames was then passed through a Python script which downloaded the message history of each of the usernames via Twitter's API.

[21] I identified the official Twitter accounts of these legislators from the roster, which provides Twitter account links, of the Parliament of Australia's website, http://www.aph.gov.au/Senators_and_Members/Members.

[22] As of August 2015, 32 of the 150 Members of Parliament and 30 of Australia's 76 Senators did not have a listed Twitter account.

Table A.1. Categorization of Political Issues for Tweet Coding Instructions

Higher government spending, even if it means higher taxes	Cut government spending, and lower taxes
Support regulation of private business to preserve the environment, protect the rights of workers	Want to see businesses unhindered by government so that they can create more jobs
Support a high minimum wage	Worry that minimum wages lead to fewer jobs
Worry that long prison sentences are unfair, expensive, and discriminator	Support tough prison sentences to deter crime, promote public safety
Support same sex marriage, abortion rights (pro-choice)	Support traditional marriage and oppose abortion rights (pro-life)
Worried about the costs of war	Generally supportive of involvement in foreign wars
Supportive of clear separation between church and state	Supporting of Judeo-Christian values guiding politics, perhaps even school prayer, in God we Trust
Celebrate ethnic diversity and granting autonomy to Aboriginal population	Worry that Australian identity will be eroded by immigration, support more control of Aboriginal areas
Favor strong action to combat global climate change, including a carbon tax	Worried that carbon tax and environmental regulations will hurt business and cost jobs

Table A.2. Examples of Tweets Placed in Each Ideological Category

Examples of Tweets Coded as Right-Leaning	
@AlexHawkeMP	RT @TonyAbbottMHR: Today is #RedTapeRepealDay. The Govt has reduced annual red tape costs by over $2 billion, double what we promised.
@FedNatDirector	We've stopped the boats, scrapped the carbon tax, invested in infrastructure and we are fixing the budget #NatsFC #auspol
@SenatorBobDay	Mining Tax repeal Press Conf. @FamilyFirstAust @SenatorBobDay and LDP @DavidLeyonhjelm in Mural Hall, Parliament House 3:15pm EST #AusPol
@JulieBishopMP	Visited #Iraq to demonstrate Australia's support for the Iraqi people in combating #Daesh #ISIL
Examples of Tweets Coded as Left-Leaning	
@AlannahMac	Today I addressed the crowd at the Rally for Renewables Rally on the importance of the renewable energy target
@tanya_plibersek	RT @MikeCarlton01: Abbott did promise to create 1 million new jobs. Just didn't mention they'd mostly be overseas
@AdamBandt	@larissawaters: Economic girly man says Mathias Cormann. Using gender as a derogatory term is so offensive
@JulieBishopMP	@thegenderagency @JohnKerry @WilliamJHague I committed to champion initiative at UN last Sept - vital cause should receive

Examples of Tweets Coded as Having No Ideological Direction	
@TonyAbbottMHR	Visited a local defence clothing manufacturer on the Gold Coast today. Thanks to Betty for showing me the ropes!
@cpyne	Go the mighty @NorwoodFC in the @SANFLnews semi final today against our across city rivals Port Adelaide #auspol
@tanya_plibersek	Vietnamese chicken lettuce cups for lunch